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| 10/663,151 | 09/15/2003 | Peter Poechmueller | INTECH 3.0-096 03 P 50757 | 2158 |

| | | | EXAMINER |
|---|---|---|---|
| 48154 | 7590 | 02/24/2006 | SONG, JASMINE |

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| ART UNIT | PAPER NUMBER |
|---|---|
| 2188 | |

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) |
| --- | --- | --- |
| | 10/663,151 | POECHMUELLER, PETER |
| | Examiner | Art Unit |
| | Jasmine Song | 2188 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)☒ Responsive to communication(s) filed on *25 November 2005*.

2a)☒ This action is **FINAL**.  2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

## Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All  b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/25/2005*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## Detailed Action

1.      This office action is in response to Amendment filed on 11/25/2005. Claims 1-21

are pending in the application. All rejections and objections not explicitly repeated below

are withdrawn.

## Specification

2.      The lengthy specification has not been checked to the extent necessary to

determine the presence of all possible minor errors.  Applicant's cooperation is

requested in correcting any errors of which applicant may become aware in the

specification.

## Claim Rejections - 35 USC § 103

3.      The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.      Claims 1-4,6,8-15,17 and 20-21 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Kurjanowicz et al. US 6,894,941 B2, in view of Feurle et al., US

2003/0043674 A1 .

Regarding claims 1 and 12, Kurjanowicz teaches that a method of reducing a

rate for refreshing a portion of a dynamic random access memory (DRAM), comprising:

storing information (it is taught as DIFF_MODE input buffer include different

access mode signals: the single cell per bit and dual cell per bit access modes signals,

col.8, lines 52-54) for the memory cells requiring refresh at a first rate (col.15, lines 37-

39) and the stored information for the same memory cells permitting refresh at a second

rate lower than said first rate (col.15, lines 40-43); and

accessing said stored information to refresh the memory cells at said first rate

and said second rate (it is taught as refreshing the memory cells at the first rate and the

second rate based on the selected DIFF_MODE signal, col.8, lines 13-26).

Kurjanowicz does not teach that a DRAM includes a first portion and a second

portion which having different plurality of memory cells for different refresh rates.

Kurjanowicz only teaches the upper memory bank and the lower memory bank as

shown in Fig.3.

However, Feurle teaches that a DRAM includes a first portion (Fig.1, one of four

memory segments) and a second portion (Fig.1, one of four segments other than the

first portion) which having different plurality of memory cells (see claim 1, each of word

line and each bit line being respectively connected to memory cells of a single memory

segment) for different refresh rates (section 0046).

It would have been obvious to the ordinary skill in the art at the time the invention

was made to utilize the teachings of Feurle into Kurjanowicz's memory system such as

a DRAM includes a first portion and a second portion which having different plurality of

memory cells for different refresh rates because refresh times which vary on a segment-

specific basis can be implemented in a way which is very easy and space-saving, and

therefore cost-effective in terms of circuitry by cyclically addressing the memory

segments and by the interruption, performed where necessary, of the passing on of the cyclically generated refresh instructions (section 0025, last seven lines).

According, one of ordinary skill in the art would have recognized this and concluded that they are from the same field of endeavor. This would have motivated one of ordinary skill in the art to implement the above combination for the advantages set forth above.

Regarding claims 2 and 13, Feurle teaches said first portion and said second portion each include one or more segments of said DRAM (Fig.1), and said information allows said first portion and said second portion to be distinguished on the basis of said segments (it is taught as the time periods between successive refreshed vary on a segment-specific basis, section 0025, first two lines).

Regarding claims 3 and 14, Kurjanowicz teaches that said first portion includes subportions (it is taught as logical sub-blocks, col.11, lines 47-48), at least some of said subportions being physically discontiguous (see Fig.6, it is taught as interleaved wordline architecture).

Regarding claims 4 and 15, Kurjanowicz teaches that said subportions are wordline spaces of said DRAM and said information allows said first portion and said second portion to be distinguished on the basis of said wordline spaces (Fig.6, col.11, lines 47-51).

Regarding claims 6 and 17, Kurjanowicz teaches the information is stored in said

DRAM (Fig.3 and 4, According to the applicant's specification, the information is stored

in the refresh map which connected to the segments, and Kurjanowicz also provide the

DIFF_MODE input buffer having different access mode signals connected to the

different banks).


Regarding claim 8, Kurjanowicz teaches that said information is stored on one or

more fuses on an integrated circuit including said DRAM (col.3, lines 34-36).


Regarding claims 9 and 20, Kurjanowicz  and Feurle teach that said information

further allows a plurality of portions numbering one to n of said DRAM including said fist

portion and said second portion to be distinguished for refreshing said plurality of

portions of said DRAM at a plurality of respective rates numbering one to n, and said

stored information is accessed to refresh said plurality of portions at said respective

rates including to refresh said first portion at said first rate, to refresh said second

portion at said second rate, and to refresh said nth portion at said nth rate (it is taught

as each segments is refreshed at a different rate, in this case, segments can be

numbered from one to N, not only segments 6a to 6d; section 0025, first two lines of

Feurle).

Regarding claims 10 and 21, Kurjanowicz teaches that said information is stored in a space accessible through one or more wordlines of said DRAM (col.8, lines 17-22).

Regarding claim 11, Kurjanowicz teaches that said information is generated by post-fabrication stress testing of said DRAM (it is taught as the information access mode signals is generated under the single cell per bit access mode and dual cell per bit access mode).

5.      Claims 5 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurjanowicz., US 6,778,457 B1 and Feurle et al., US 2003/0043674 A1, in view of Klein., US 6,838,331 B2.

Regarding claims 5 and 16, Kurjanowicz and Feurle teaches that said first portion is refreshed at said first rate and said second portion is refreshed at said second rate (see col.8, lines 22-27), Kurjanowicz and Feurle do not teach that both said first portion and said second portion operate in a mode selected from the group consisting of active mode and sleep mode. However, Klein teaches that both said first portion and said second portion  (the memory cells in the DRAM) operate in a mode selected from the group consisting of active mode and sleep mode (col.2, lines 39-50).

It would have been obvious to the ordinary skill in the art at the time the invention was made to utilize the teachings of Klein into Kurjanowicz and Feurle's memory system such as the memory cells in the DRAM operate in a mode selected from the group consisting of active mode and sleep mode because it will reduce the power

consumed by a DRAM device during refresh in at least some operating modes without

risking a loss of data stored in the DARM device (col.3, lines 36-54).

According, one of ordinary skill in the art would have recognized this and

concluded that they are from the same field of endeavor. This would have motivated

one of ordinary skill in the art to implement the above combination for the advantages

set forth above.


6.      Claims 7 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Kurjanowicz., US 6,778,457 B1 and Feurle et al., US 2003/0043674 A1, in view of

Caulkins., US 6,473,355 B2.

Regarding claims 7 and 18, Kurjanowicz and Feurle teach the claimed invention

as shown above (claims 1 and 12), Kurjanowicz and Feurle do not teach that said

information is stored in a non-volatile memory and accessed from said non-volatile

memory for storage in said DRAM. However, Caulkins teaches said information is

stored in a non-volatile memory and accessed from said non-volatile memory for

storage in said DRAM (col.3, lines 40-44 and col.5, lines 9-12).

It would have been obvious to the ordinary skill in the art at the time the invention

was made to utilize the teachings of Caulkins into Kurjanowicz and Feurle's memory

system such as said information is stored in a non-volatile memory and accessed from

said non-volatile memory for storage in said DRAM because the non-volatile memory

can maintain data for extended periods of time without any power being supplied to the

device (col.1, lines 36-38) and the non-volatile memory also provides the stability and security (col.3, lines 23-24).

According, one of ordinary skill in the art would have recognized this and concluded that they are from the same field of endeavor. This would have motivated one of ordinary skill in the art to implement the above combination for the advantages set forth above.

Regarding claim 19, Kurjanowicz teaches that said information is stored on one or more fuses on an integrated circuit including said DRAM (col.3, lines 34-36).

## Response to Arguments

7.      Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

## Conclusion

8.      Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.  Accordingly, **THIS ACTION IS MADE FINAL**.  See MPEP § 706.07(a).  Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action.  In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

9.      When responding to the office action, Applicant is advised to clearly point out the

patentable novelty which he or she thinks the claims present in view of the state of the

art disclosed by the references cited or the objections made. He or she must also show

how the amendments avoid such references or objections. See 37 C.F.R. 1.111 (c).

10.     When responding to the office action, Applicants are advised to provide the

examiner with the line numbers and page numbers in the application and/or references

cited to assist examiner to locate the appropriate paragraphs.

11.     Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jasmine Song whose telephone number is 571-272-

4213. The examiner can normally be reached on 8:00-4:30.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone

numbers for the organization where this application or proceeding is assigned are 571-

273-8300.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is 703-305-

3900.

Jasmine Song                      Mano Padmanabhan

Patent Examiner                   Supervisory Patent Examiner

February 14, 2006                 Technology Center 2100

MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER